

Beware the sleeping menace!

***Aka Fungal diseases in pistachio
orchards***

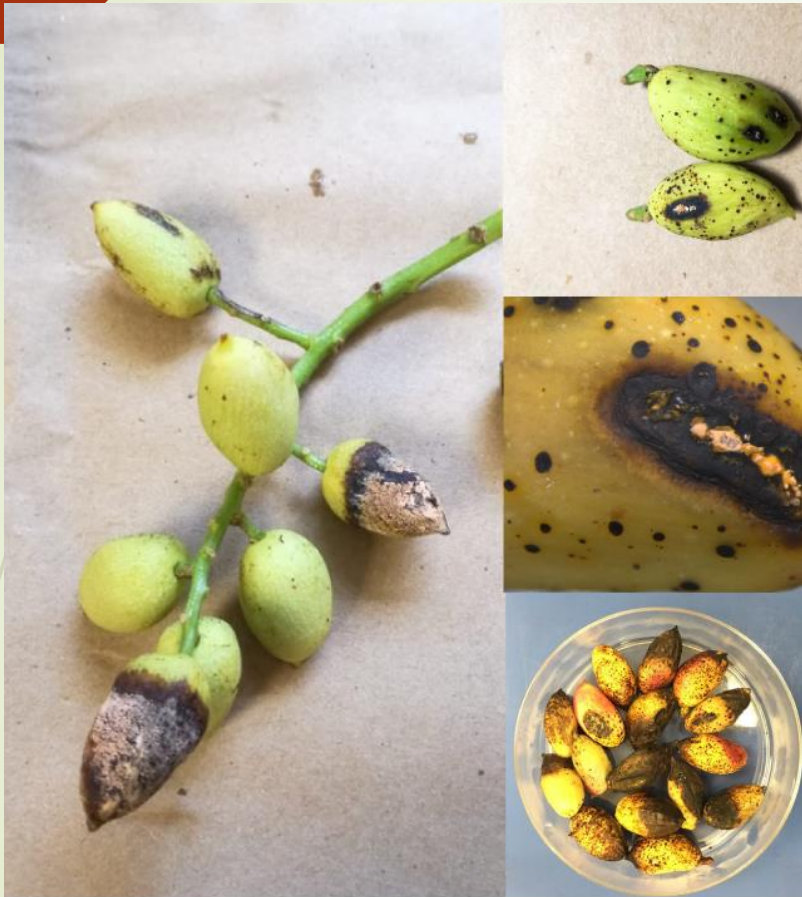
Barbara Hall

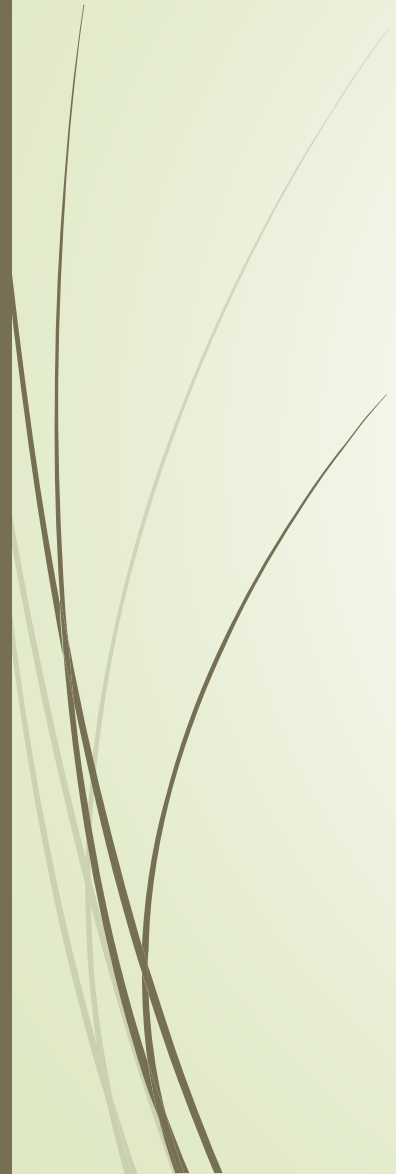
Nov 2022

Anthracnose

- Fungus
- *Colletotrichum*
 - *acutatum* sensu lato
 - *fioriniae*?
- Wide host range
- Pathogen, saprophyte, endophyte or all three?

Symptoms





Symptoms



Biology

Overwinters in old infected plant material



Biology

The spores are released in spring and early summer following rain to cause the primary infections

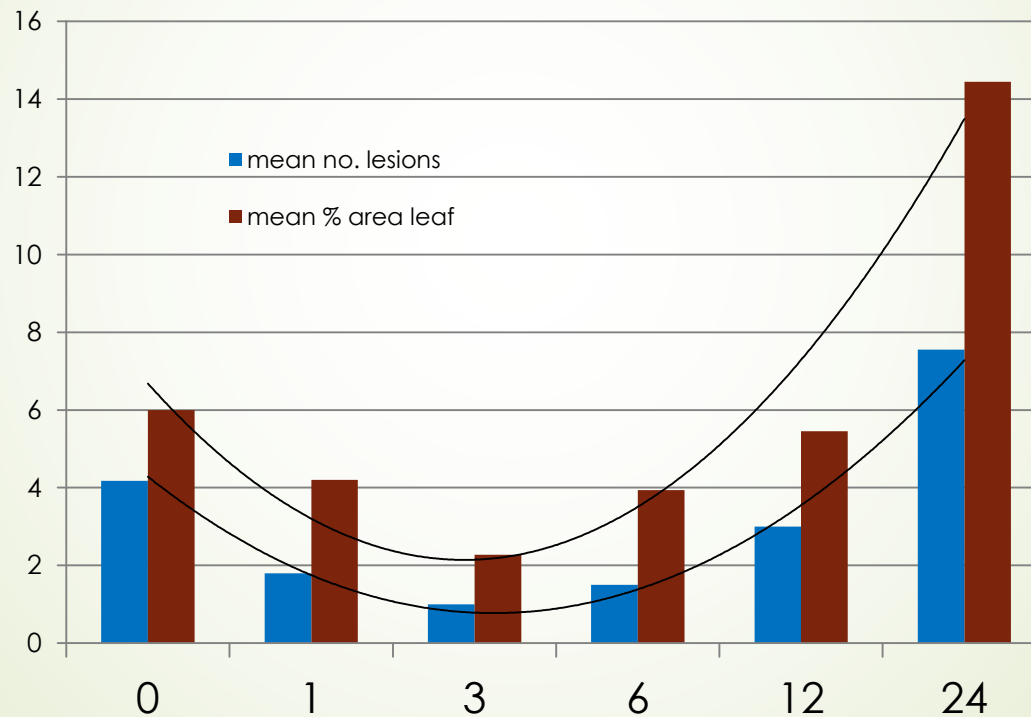


Secondary infections spread from the primary



Infection

- <1 hr leaf wetness
- >1 hr increases infection severity



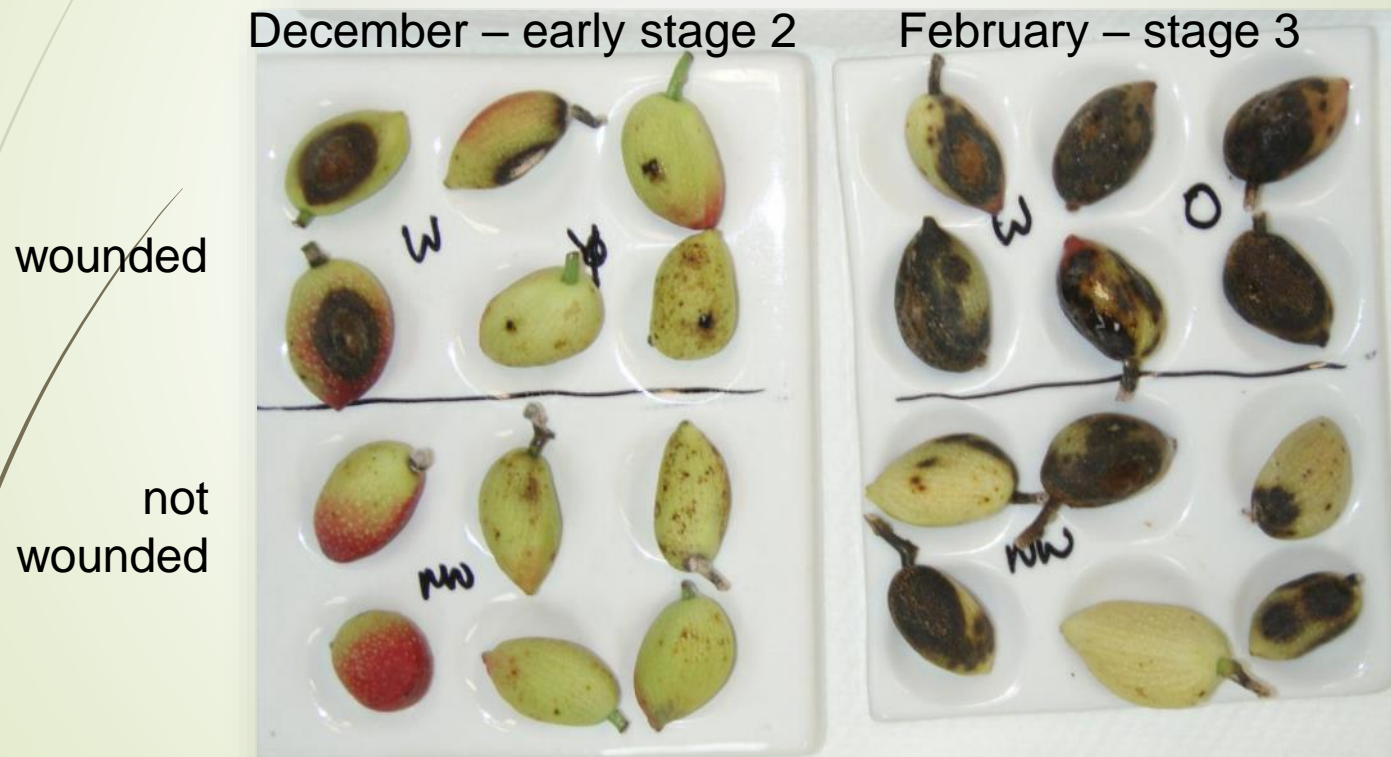
Infection

- Rachis, leaves infected at any time
- Infection can remain latent and not express until conditions suitable



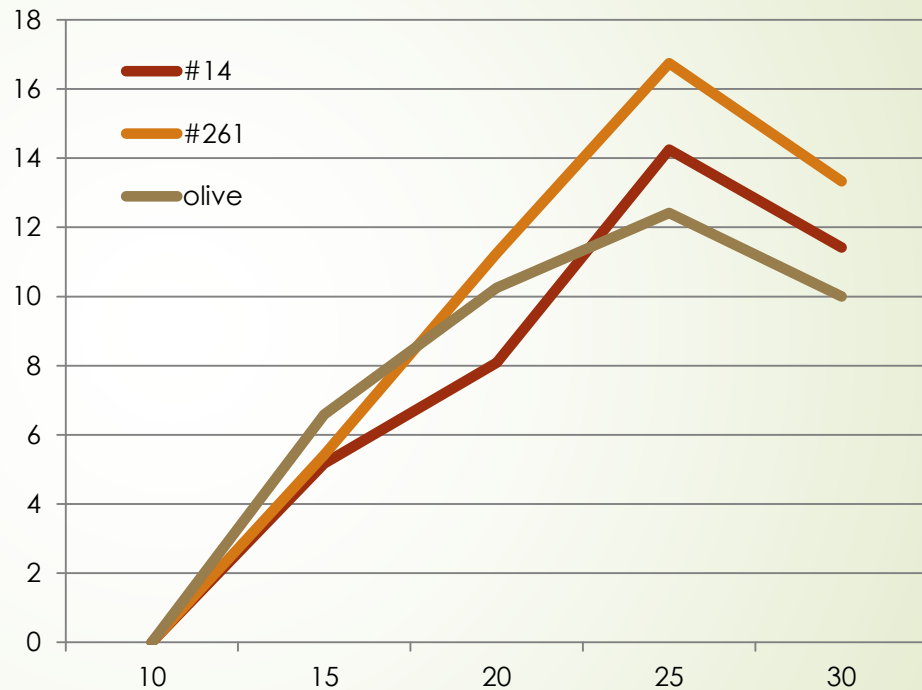
Infection

- Older nuts infected at any time
- Young nuts need wounds



Disease development

Grows from 10-35°C, prefers around 25°C



No lesions grew by 10 days at 5 or 10°C, but leaves and fruit were still infected

“BOT” or Panicle & shoot blight

- Fungus
 - *Neofusicoccum parva*
 - *Botryosphaeria dothidea*
- Wide host range



Symptoms



Symptoms



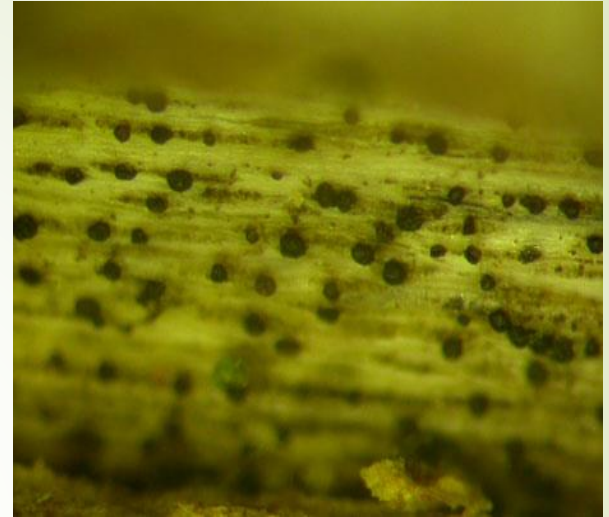
Biology

Overwinters in old infected plant material



Biology

The spores are released in spring and early summer following rain to cause the primary infections



- Grows from 10-35+°C, prefers 27-30°C
- Wetness period of over 9 hours needed
- Spores can germinate and infect within 1.5 hrs
- Disease severity highest with a warm wet spring
- Can be spread by insects, budding



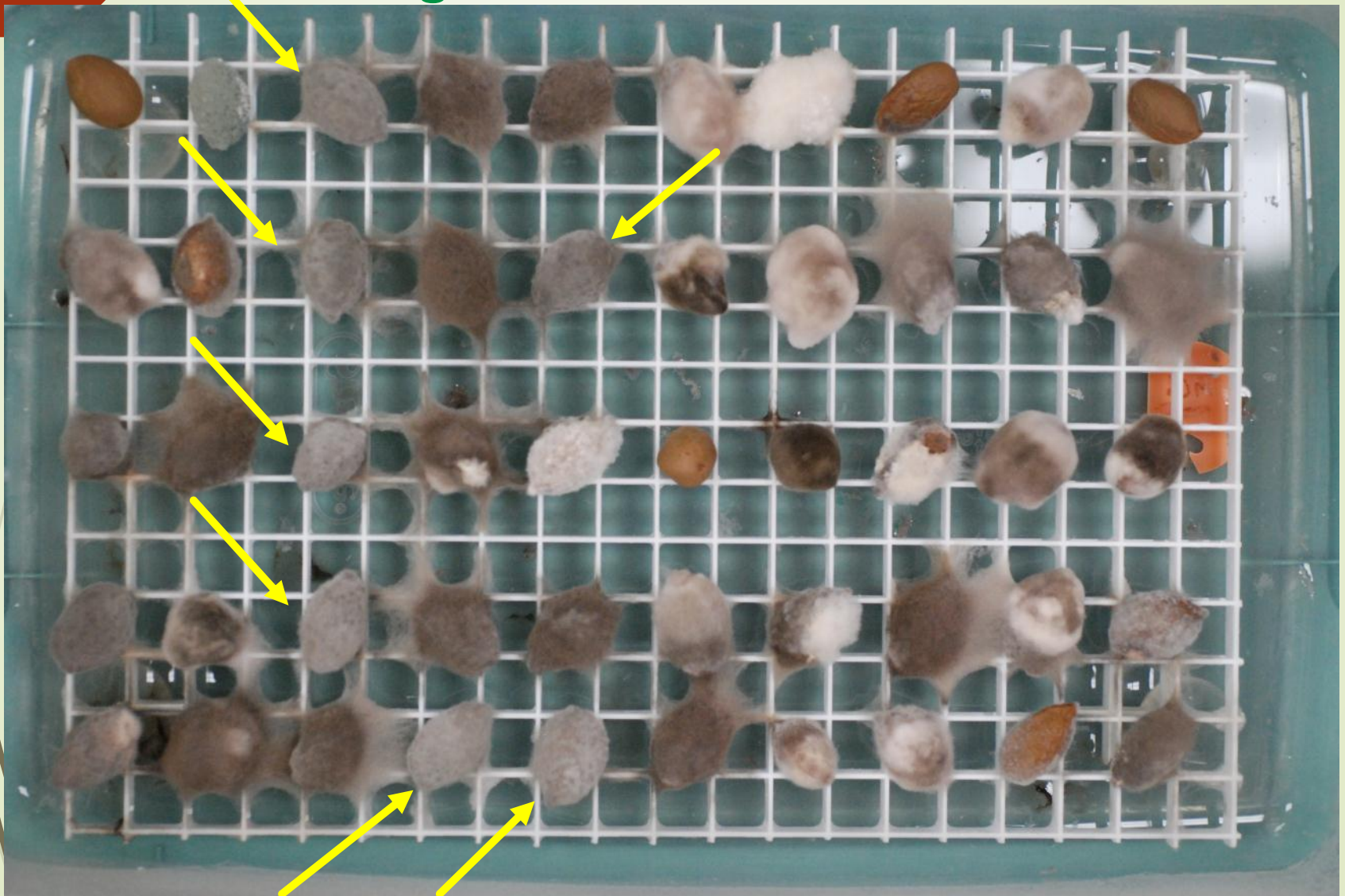
Monitoring: BUDMON & ONFIT

1. Shows trends in orchard
2. ONFIT more useful for *Botryosphaeria* than *Colletotrichum*
3. Correlation with risk potential at harvest?

BUDMON testing



ONFIT testing



Themis Michailides, UC Davis

Alternaria

- Fungus
 - *Alternaria alternata* plus *A. spp.* ??
- Wide host range
- Pathogen, saprophyte, endophyte or all three?



Symptoms



Symptoms

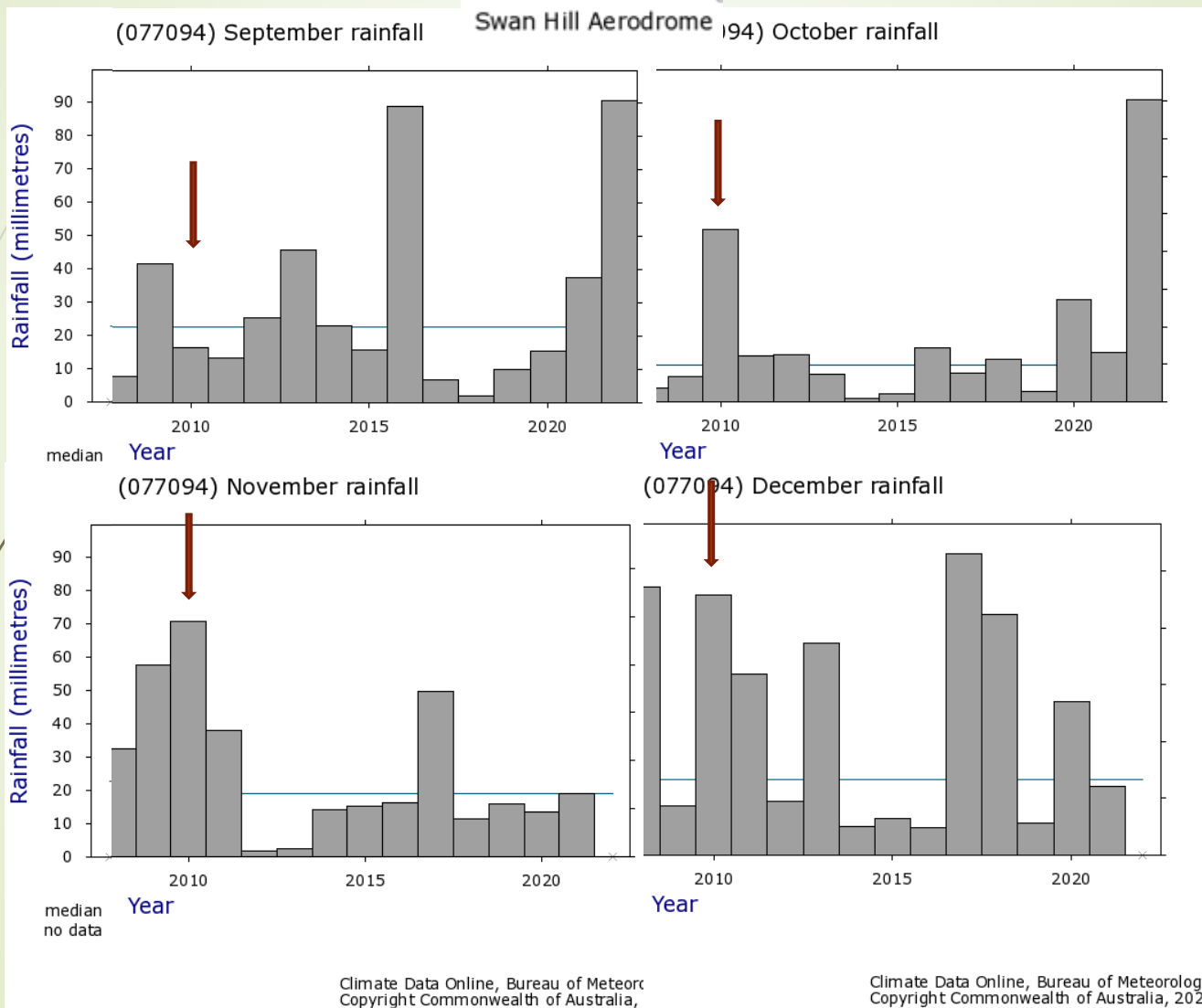


Biology

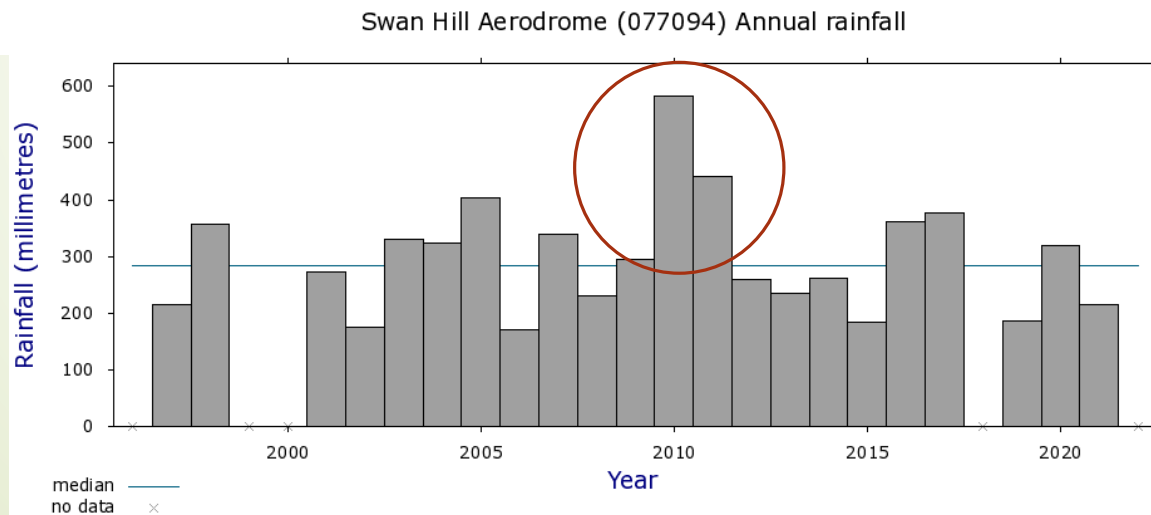
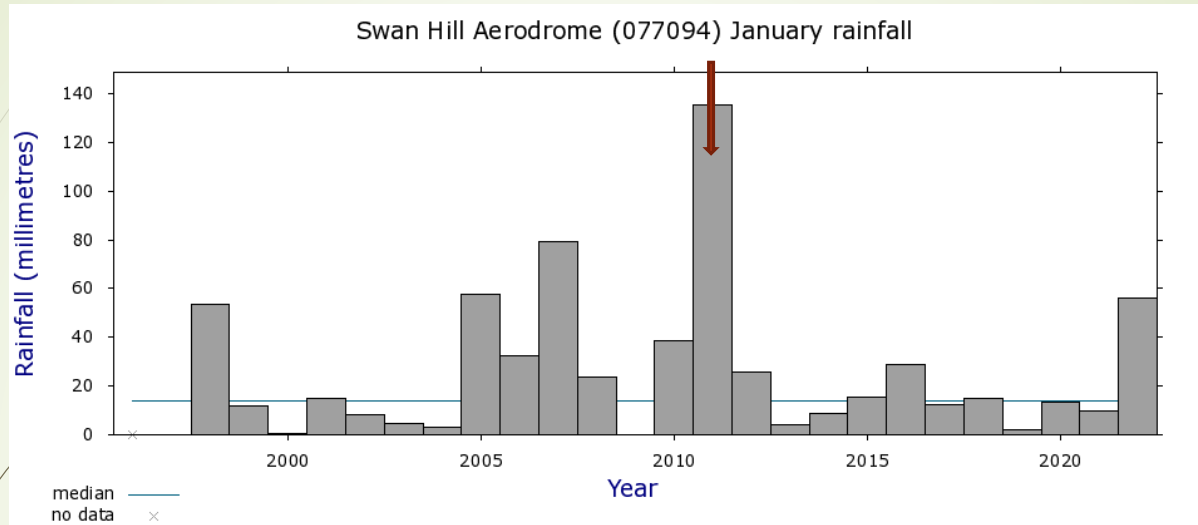
- Survives as saprophyte (plant trash) & endophyte/pathogen on other crops, weeds etc
- Likes warm wet conditions (25-28°C)
- Free water increases humidity and encourages disease



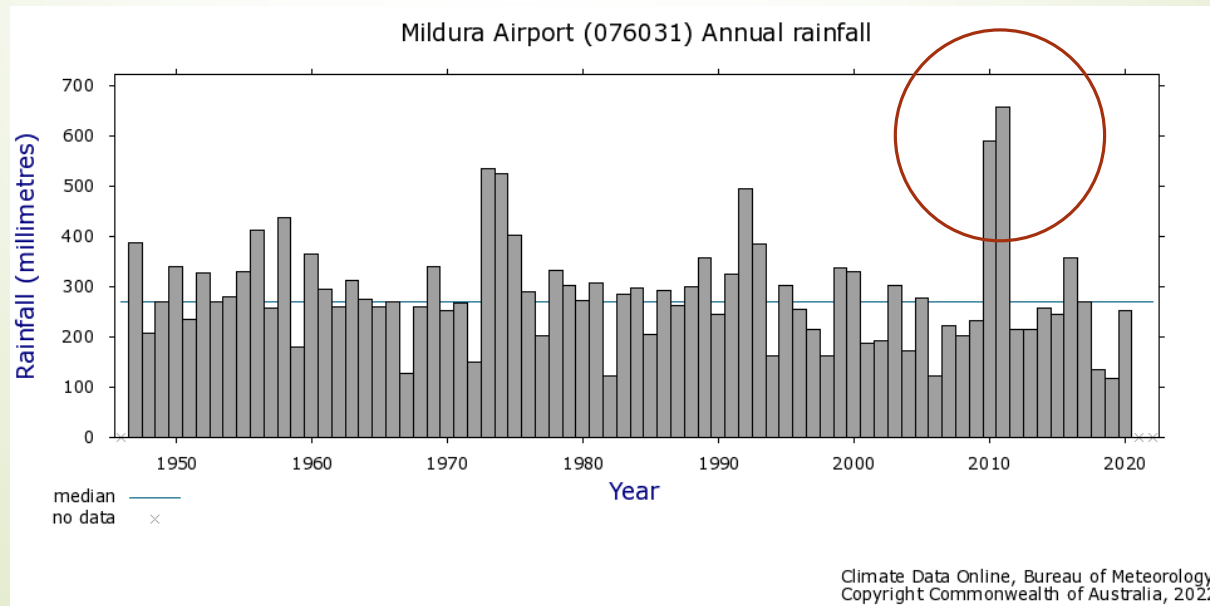
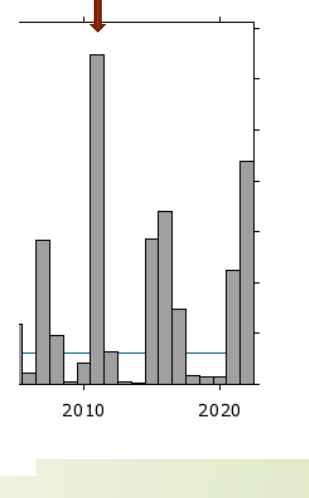
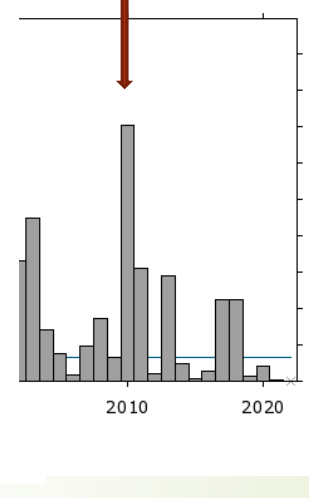
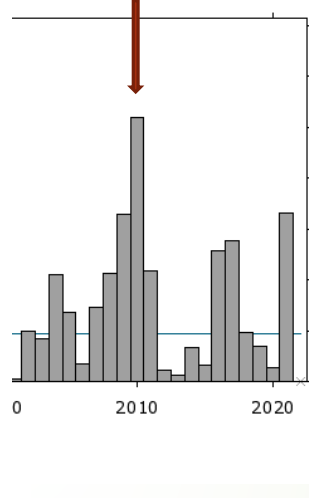
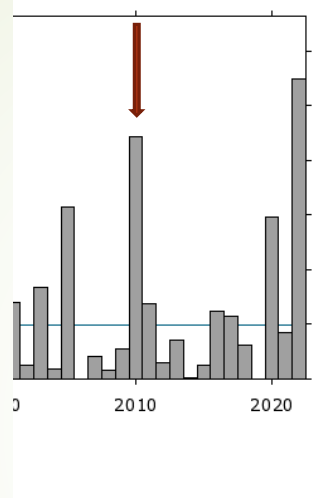
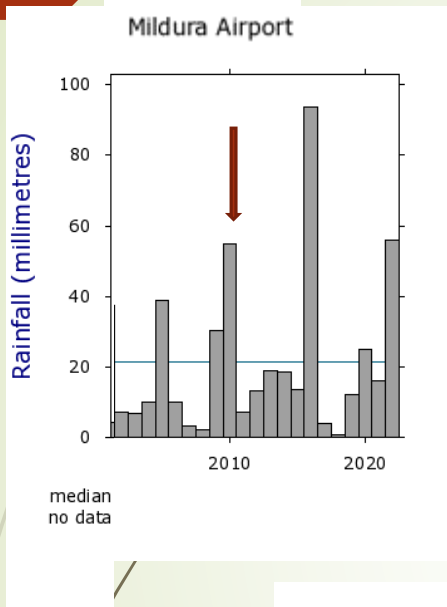
So should I be worried this season?



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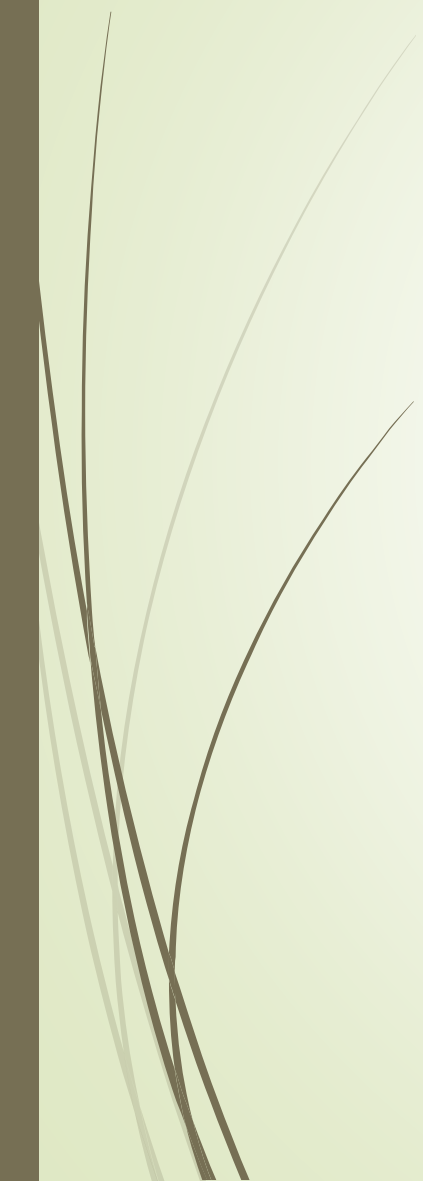
So should I be worried this season?

Temperature	Swan Hill		Mildura	
	2010	2022	2010	2022
Oct	23.0	20.9	23.5	22.5
Nov	26.4	(17.8)	26.2	(18.6)
Dec	28.2	??	28.3	??



Possibly!

So what should I do??





Management

1. Sanitation – reduce inoculum load
2. Canopy management – aeration to reduce leaf wetness
3. Avoid damaging young nuts
4. Manage weeds and irrigation (especially for *Alternaria*)
5. Monitor? Disease and weather!
6. Adjust harvest times?

Management

Use an **effective** fungicide program

- **Treatment**
- **Timing**
- **Technique**



*Integrated management
is critical*

